UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
AIR, WASTE AND TOXICS

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Re: Applicability of 40 C.F.R. § 60 Subpart AAAA to the Green Power, Inc., Facility in Pasco, Washington

Dear Ms. Wood and Ms. Yowell:

This letter responds to inquiries from the Washington Department of Ecology (Ecology) and Green Power, Inc., (Green Power) regarding the applicability of the New Source Performance Standards for Small Municipal Waste Combustion Units (40 C.F.R. § 60 Subpart AAAA) to the Green Power facility in Pasco, Washington. Ecology requested a determination of the applicability of Subpart AAAA to the facility process configuration described in Green Power's February 11, 2008, Notice of Construction (NOC) application. Green Power, through its counsel Foster Pepper, PLLC, requested an applicability determination with respect to the same configuration that is the subject of Ecology's request, as well as various alternative process scenarios.[1]

Green Power describes its process in the NOC and Amended NOC as a proprietary catalytic pressure-less depolymerization process (CDP) which according to Green Power can convert municipal solid waste or a wide variety of organic wastes into synthetic liquid petroleum fuel which includes a small amount of non-condensable hydrocarbon gases. According to the February 11, 2008, NOC, the non-condensable hydrocarbon gas portion of the synthetic fuel is combusted in a turbine to generate power for the operation of the process. EPA has determined the Green Power process described in the February 11, 2008, NOC would be subject to Subpart AAAA due to the combustion of non-condensable hydrocarbon gases derived from waste in a gas combustion turbine. However, as explained further below, under an alternative process

[1] The alternative operating and process scenarios that are the subject of Green Power's request for an applicability determination are detailed in Green Power's Amended Notice of Construction (Amended NOC) dated June 27, 2008 and in Green Power's Response to Motion for Summary Judgment.

scenario which does not involve combustion, the CDP unit, as described by Green Power, would not be subject to Subpart AAAA.

Subpart AAAA Applicability to the Gas Combustion Turbine

A municipal waste combustion unit is subject to the requirements of Subpart AAAA if:

(a) the municipal waste combustion unit is a new municipal waste combustion unit; and

(b) the municipal waste combustion unit has the capacity to combust at least 35 tons per day but no more than 250 tons per day of municipal solid waste or refuse-derived fuel.

40 C.F.R. § 60.1015 defines a "new" municipal waste combustion unit as a unit that commences construction after Aug 30, 1999, or one that commenced reconstruction or modification after June 6, 2001. A municipal waste combustion unit (MWC) is defined at 40 C.F.R. § 60.1465 as "*any setting or equipment that combusts solid, liquid, or gasified municipal solid waste* (MSW)" (emphasis added). The definition goes on to state that a MWC includes all equipment within specified boundaries. The boundaries start at the municipal solid waste pit and extend through a number of discharge points including the combustion flue gas system. The combustion unit flue gas system ends immediately following the combustion chamber if there is no heat recovery equipment.

Applying this definition to the process configuration described in the Green Power NOC dated February 11, 2008, it is apparent that the MWC unit includes in part equipment in which combustion of MSW occurs. The power turbine section and electrical generator set (also commonly referred to as a turbine-generator set) are not part of the Green Power MWC. However, the compressor section and combustor section of the turbine at the Green Power facility are within the MWC boundaries. In the operation of a combustion turbine fueled with gasified MSW, the compressor section and combustor section together are used to create compressed combustion gases that are supplied to the power turbine section which expands the combustion gases (extracting energy) in the rotating blades of the power turbine which drives the generator set. Therefore, the compressor section and combustor section of the turbine are part of the MWC. The regulatory definition of a MWC specifically excludes turbines that combust landfill gases; however, the Green Power operation does not combust landfill gases and the landfill gas exemption, therefore, is not applicable.

Green Power specifically requested that EPA evaluate whether the MWC is subject to Subpart AAAA due to its combustion capacity. If a MWC has a combustion capacity of at least 35 tons per day but no more than 250 tons per day of municipal solid waste or refuse-derived fuel, it is subject to Subpart AAAA.[2] Applicability of Subpart AAAA is based on the

[2] If the MWC's combustion capacity is less than 35 tons per day, applicability of 40 C.F.R. Part 60 Subpart EEEE (Standards of Performance for Other Solid Waste Incinerators) or 40 C.F.R. Part 60 Subpart CCCC (Standards of Performance for Commercial and Industrial Solid Waste Incineration Units) should be examined. If the capacity is greater than 250 tons per day, the

combustion capacity of the MWC, and would not include the capacity attributable to the flare since the flare is being used as a control device.

To determine the combustion capacity of the MWC, it is necessary to determine, based on the turbine's combustion capacity when combusting non-condensable hydrocarbon gases, the equivalent amount of MSW or refuse-derived fuel. EPA has calculated a unit capacity for the combustion turbine of 93 tons of MSW per day based on information provided in the NOC. The NOC states that there is 14,000 BTU per kW for the 2.5 MW and it is represented that this reflects the turbine's maximum combustion capacity[3]. It must be assumed that was meant to be 14,000BTU/hr per kW for the units to be correct. Multiplying 2500 kW by 14,000 Btu/hr / kW results in a heat input capacity of 35 MMBtu/hour and applying a heating value of 4, 500 British thermal units per pound of MSW combusted as specified in Subpart AAAA, 40 CFR 60.1460(d)(1)(ii), yields a unit capacity for the combustion turbine of 93 tons of MSW per day, which is within the range for Subpart AAAA applicability.

Subpart AAAA Does Not Apply to the Green Power CDP in the Absence of Combustion at the Plant

Green Power describes its process as a proprietary catalytic pressure-less depolymerization process (CDP) where municipal solid waste or a wide variety of organic wastes are "cracked" at the molecular level and the long-chain polymers (plastics, organic material such as wood, etc.) are chemically altered to become short-chain hydrocarbons with no combustion. Combustion requires oxygen or a similar compound, but according to Green Power the CDP occurs in an anaerobic environment, exposed only to inert gasses like nitrogen. Green Power states that because of the presence of non-condensable hydrocarbon gases in the reactor, allowing oxygen to enter the system could result in an explosion. EPA has determined that if the CDP is as described by Green Power[4] it would not be subject to Subpart AAAA due to the absence of combustion in the CDP if the plant is constructed such that there is no combustion of the synthetic fuel product.

Subpart AAAA Does Not Apply to the Proposed Flare

Subpart AAAA excludes air pollution control equipment from the boundaries of an MWC unit, pursuant to the definition of a Municipal Waste Combustion Unit found at 40 C.F.R. § 60.1465. Therefore, if Green Power installs a flare that functions as an air pollution control device, the flare would not be considered part of an MWC.

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applicability of 40 C.F.R. Part 60 Subpart Eb (Standards of Performance for Large Municipal Waste Combustors) should be examined.

[3] Based on information provided in the Notice of Construction Air Permit Application dated February 2008, Appendix B, Table B-2, Footnote 1.

[4] The description of the process which EPA relied upon to make this determination is found in the "Declaration of Michael Spitzauer in Opposition to Respondent's Motion for Summary Judgment," which was included as an attachment to Green Power's January 25, 2010 request to EPA.

Subpart AAAA does not apply to the Proposed Algae Production Alternative

Green Power has requested that EPA determine the applicability of Subpart AAAA to a proposal whereby the non-condensable hydrocarbon gases produced in the reactor are routed to a biological treatment unit as a nutrient in the production of algae which would subsequently be harvested and reintroduced as a feedstock for the CDP process. EPA has determined that Subpart AAAA would not apply in this situation because no combustion is occurring.

Other Considerations and Exemptions from Subpart AAAA

Subpart AAAA would not apply to a gas combustion turbine if the facility is able to satisfy the requirements for either the small power production facility or the cogeneration facility exemptions found at 40 C.F.R. § 60.1020(b) and (c). In order to avail itself of either of those exemptions, however, Green Power must provide documentation supporting an assertion that the facility qualifies as specified in the regulation, which Green Power has not done to-date. Accordingly, EPA has not evaluated Green Power's eligibility for those exemptions.

If you have any questions about this applicability determination, please contact Heather Valdez of the Region 10 Office of Air, Waste and Toxics at (206) 553-6220.

Sincerely,

Nancy Helm, Manager
Federal and Delegated Air Programs Unit

cc: Kay Shirey, Assistant Attorney General, State of Washington
Gregory Flibbert, WA State Department of Ecology